

**REMARKS**

In the Final Office Action mailed on June 1, 2005, the Examiner rejected claims 1 and 2 under 35 U.S.C. § 101 as being directed to non-statutory subject matter and rejected claims 1-3 under 35 U.S.C. § 103(a) as being obvious over Finkelstein, U.S. Patent No. 5,060,265, in view of Matsumoto et al., U.S. Patent No. 6,320,829. The Examiner further rejected claims 1-3 under 35 U.S.C. § 112, 1<sup>st</sup> paragraph, for allegedly lacking sufficient written description in the specification, and under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph, for being indefinite. The Examiner objected to the specification under 35 U.S.C. § 132(a) on the basis that the specification amendments made in the February 2, 2005, Reply to Office Action allegedly introduced new matter. Finally, the Examiner objected to the specification for failing to provide antecedent basis for the claimed subject matter.

By this Amendment After Final, Applicants propose amending claims 1-3 and adding new claims 4-15. Pursuant to 37 C.F.R. § 1.116, these amendments are appropriate because they address requirements of form set forth in the Final Office Action and they present the rejected claims in better form for consideration on appeal, if necessary.

*Specification Objections*

Regarding the specification, the Examiner objected under 35 U.S.C. § 132(a) to amendments made in the February 2, 2005, Reply to Office Action. In particular, the Examiner alleged that those amendments introduced new matter. The Examiner also objected to the specification for failing to provide antecedent basis for the claimed subject matter.

In the Reply to Office Action filed on February 22, 2005, Applicants amended the specification to recite a “cycle of the PN signal in which the first bit, the ninth bit and the seventeenth bit take always 0.” In the Final Office Action, the Examiner alleged that this matter is not supported by the original disclosure. Applicants respectfully disagree because this subject matter is fully supported by the originally filed specification. For example, on page 8, the specification explains that:

ASCII code, which is one of character system for expressing characters and numerals, can express 128 characters including 96 7-bit capital/small alphabetic letters, numerals and special letters and 32 control characters. In this case, **the head bit of 8 bits (1 byte)** which is the basic processing unit of information for today's digital computer **is always 0**.

(Specification, p. 8, ll. 6-12 (emphasis added).) Thus, the specification explains that ASCII code is expressed in 8-bit bytes in which the head bit (i.e., the first bit) is always 0. The specification goes on to describe a method for enciphering ASCII code using a PN signal cycle length of 24 bits with “a one-to-one correspondence between plaintext code and cryptographic code.” (Specification, p. 8, ll. 17-24; Fig. 3.) In a 24-bit string of ASCII characters, each 8-bit byte has a 0 as its head, or first, bit. Thus, it is clear from the specification as filed that, in a PN cycle with a one-to-one correspondence to a 24-bit string of ASCII characters, bits 1, 9, and 17 (i.e., those corresponding to the head bits of each 8-bit byte) will always be 0.

Even if the Examiner maintains that this is not expressly stated in the original disclosure, it is certainly inherent from the specification. As explained in M.P.E.P. section 2163.07(a), inherent functions, theories, or advantages may be included in amendments without introducing prohibited new matter. Accordingly, the language

added by the February 22, 2005, amendment, does not constitute new matter.

Applicants therefore decline to cancel this matter from the specification and instead request the withdrawal of the section 132(a) objection to the specification.

The Examiner further objected to the specification as failing to provide proper antecedent basis for the claim term “a predetermined large value.” By this Amendment, Applicants have amended the claim language to recite a “least common multiple of the length of a PN signal cycle and the basic processing unit of said plaintext code has a **large value relative to said PN signal cycle.**” This amended claim language is fully supported by the specification. For example, the specification describes a stream enciphering method in which “[t]he cycle of a combination of the basic processing unit of plaintext code with the cycle of the PN signal...is relatively long so as to obtain mutual synchronism.” (Specification, p. 7, ll. 31-34.) More specifically, the specification explains:

...assuming that the basic processing unit of the plaintext code is 8 bits (even number), 23 bits (odd number) is used as the cycle of the PN signal not coinciding with this 8 bits (even number). In this case, 8-bit and 23-bit are not capable of obtaining synchronism until 184-bit cycle is reached, which is the least common multiple of 8 X 23 calculated from a place on time axis in which mutual head bits are synchronous with each other.

(Specification, p. 7, ll. 24-31) Because the amended claim language is fully supported by the specification, Applicants request the withdrawal of the Examiner's objection to the antecedent basis provided in the specification for the claimed subject matter.

#### *Section 101 Rejections*

In the Final Office Action, the Examiner rejected claims 1 and 2 under 35 U.S.C. § 101 as being directed to non-statutory subject matter. In particular, the Examiner stated that the claim language raises a question as to whether the claims fall within the “technological arts.” (Final Office Action, p. 2.) However, in a recent precedential opinion, the Board of Patent Appeals and Interferences held that “there is currently no judicially recognized separate ‘technological arts’ test to determine patent eligible subject matter under § 101.” *Ex parte Lundgren*, Appeal No. 2003-2088 (B.P.A.I. 2005). Applicants contend that the claims clearly recite statutory subject matter under the judicially recognized test set forth by the Federal Circuit and followed by the M.P.E.P.: that the claimed invention as a whole produces a “useful, concrete and tangible result....” *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, 149 F.3d 1368, 1373 (Fed. Cir. 1998); see M.P.E.P. § 2106. Thus, in light of the Board’s recent *Lundgren* opinion, Applicants request the reconsideration and withdrawal of the section 101 rejections of claims 1 and 2.

#### *Section 112 Rejections*

The Examiner further rejected claims 1-3 under 35 U.S.C. § 112, 1<sup>st</sup> paragraph, for allegedly lacking sufficient written description in the specification and under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph, for being indefinite. Regarding the written description requirement, the Examiner stated that the term “predetermined large value” is not described in the application as filed. By this Amendment, Applicants have amended the claim language to recite a “least common multiple of the length of a PN signal cycle and the basic processing unit of said plaintext code has **a large value relative to said PN signal cycle.**” This amended claim language is fully supported by the specification.

For example, the specification describes a stream enciphering method in which “[t]he cycle of a combination of the basic processing unit of plaintext code with the cycle of the PN signal...is relatively long so as to obtain mutual synchronism.” (Specification, p. 7, ll. 31-34.) More specifically, the specification explains:

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(Specification, p. 7, ll. 24-31) Because the claim language is fully supported by the specification, Applicants request the withdrawal of the section 112, 1<sup>st</sup> paragraph, rejections of claims 1-3.

Regarding the clarity of the claim language, the Examiner stated that the term “large” is not defined in the claim and therefore renders the claim indefinite. As discussed above, Applicants have amended the claim language to recite a “least common multiple of the length of a PN signal cycle and the basic processing unit of said plaintext code has **a large value relative to said PN signal cycle.**” Thus, the claim itself now clearly defines the term “large,” i.e., the least common multiple recited in the claims has a large value relative to the claimed PN signal cycle. Because the claim particularly points out and distinctly claims the subject matter of the invention, Applicants request the withdrawal of the section 112, 2<sup>nd</sup> paragraph, rejections of claims 1-3.

#### *Section 103 Rejections*

Claims 1-3 were also rejected under 35 U.S.C. § 103(a) as being obvious over Finkelstein in view of Matsumoto et al. To sustain a *prima facie* case of obviousness under 35 U.S.C. § 103(a), the references, taken alone or combined, must teach or suggest each and every element recited in the claims. M.P.E.P. § 2143.03 (8<sup>th</sup> ed. 2001, 2nd revision May 2004). Furthermore, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references in a manner resulting in the claimed invention. Id. at § 2143.01.

Applicants contend that there would have been no motivation to combine the references as the Examiner suggests because Finkelstein and Matsumoto et al. are directed to solving different problems. Matsumoto et al. describes a process for creating decrypting keys to authenticate electronic signatures (Matsumoto et al., col. 16, ll. 52-56) while Finkelstein describes a method for protecting a linear PN signal by introducing non-linearity into the signal (Finkelstein, Abstract). The use in Matsumoto et al. of arbitrarily chosen large numbers to generate a decrypting key is irrelevant to the goal in Finkelstein of introducing non-linearity into a PN signal.

Furthermore, even if there is some motivation to combine the references as the Examiner suggests, Finkelstein and Matsumoto et al., taken alone or combined, do not teach or suggest every element of the claims as amended. Claims 1-3, as amended, recite forming a PN signal such that a "least common multiple of the length of a PN signal cycle and the basic processing unit of said plaintext code has a large value relative to said PN signal cycle." The cited references, taken alone or in combination, fail to teach or suggest at least this claim element.

Instead, Finkelstein discloses a method that introduces non-linearity into a PN signal by altering at least one bit of the PN signal sequence in real time or by ignoring at least one bit of the PN sequence. (Finkelstein, col. 3, ll. 64-66; col. 4, ll. 32-36.) The reference explains that the introduction of non-linearity in the PN signal sequence secures a system against cryptographic attacks. (Id., col. 3, ll. 18-31.) Creating a non-linear PN signal by ignoring or altering bits in the PN signal does not teach or suggest forming a PN signal “such that the least common multiple of the length of a PN signal cycle and the basic processing unit of said plaintext code has a large value relative to said PN signal cycle,” as recited in the claims.

Matsumoto et al. merely teaches a method for creating decrypting keys by “arbitrarily choosing” two large prime numbers and calculating their least common multiple L that has no common factor with an integer e which is a decrypting key. (Matsumoto et al., col. 17, ll. 1-9.) Matsumoto et al. does not even mention anything about PN signals or basic processing units of plaintext code.

Combining the teachings of Matsumoto et al. with those of Finkelstein does not teach or suggest the claimed invention. Even if the calculations of Matsumoto et al. were used with the method of Finkelstein, the numbers in Matsumoto et al. are “arbitrarily chosen,” whereas the claims recite that the least common multiple is taken from the length of a PN signal cycle and the basic processing unit of plaintext code. Furthermore, the PN signal created in Finkelstein is altered to introduce non-linearity, which is incompatible with a PN signal formed “such that the least common multiple of the length of a PN signal cycle and the basic processing unit of said plaintext code has a large value relative to said PN signal cycle,” as recited in the claims.

In summary, there would have been no motivation to combine Finkelstein and Matsumoto et al. as suggested in the Final Office Action, and, even if a motivation to combine the references could be shown, the references, taken alone or together, fail to teach or suggest every element of claims 1-3, as amended. Therefore, Applicants respectfully request the reconsideration and withdrawal of the section 103 rejections of claims 1-3. Furthermore, each of new claims 4-15 depends directly or indirectly from one of claims 1-3 and is therefore allowable over the cited references by virtue of its dependence from an allowable claim.

Applicant respectfully requests that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing claims 1-15 in condition for allowance. Applicants submit that the proposed amendments of claims 1-3 and new claims 1-15 do not raise new issues or necessitate the undertaking of any additional search of the art by the Examiner, since all of the elements and their relationships claimed were either earlier claimed or inherent in the claims as examined. Therefore, this Amendment should allow for immediate action by the Examiner.

Furthermore, Applicants respectfully point out that the final action by the Examiner presented some new arguments as to the application of art against Applicant's invention. It is respectfully submitted that the entering of the Amendment would allow the Applicants to reply to the final rejections and place the application in condition for allowance.

Finally, applicants submit that the entry of the amendment would place the application in better form for appeal, should the Examiner dispute the patentability of the pending claims.



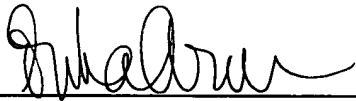
In view of the foregoing remarks, Applicants submit that this claimed invention, as amended, is neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicants therefore request the entry of this Amendment, the Examiner's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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